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Agricultural Memorandum No 565

Pig Transit Deaths - 12 years daily data

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Previous Ag Memos (535 & 557) indicated that deaths in transit were related to mean daytime temperatures.

Data for 12 years, 1961-1972, were available on a daily basis for an abattoir in W London. These were compared with the mean daytime temperatures for Kew, calculated from maxima and minima. The numbers dead on arrival (DOA), dead in pens (DIP) and the total transported were allocated into 1°C temperature ranges (T to T + 0.9); means were then calculated of deaths per 1000 pigs in transit.

The full results are given in the appendix. Two daily records were omitted, one when 30 pigs in one truck were dead on arrival, and the other when it was known that the pens had not been emptied for several days and 13 were reported dead.

Analysis. The Kew temperatures can only be an approximate guide to the general temperatures over the area of collection. The data were therefore averaged over overlapping triplets of temperature. The 7 months January-July were analysed separately from the remaining 5 months August-December, giving results:-

Mean Daytime Temperature (°C)	Mean deaths per 1000 (Total: DOA + DIP)	
	January - July	August - December
- 2	0.93	
- 1	0.55	
0	0.58	
1	0.60	0.46
2	0.68	0.51
3	0.64	0.54
4	0.66	0.60
5	0.63	0.59
6	0.63	0.65
7	0.61	0.71
8	0.64	0.75
9	0.67	0.79
10	0.80	0.79
11	0.84	0.86
12	0.94	0.89
13	1.00	0.92
14	1.08	0.99
15	1.21	1.08
16	1.32	1.17
17	1.51	1.36
18	1.68	1.45
19	1.98	1.74
20	2.18	1.80
21	2.55	2.28
22	2.86	2.65
23	4.35	
25	13.09	

Conclusions

1. There is a suggestion of increased death risk at low daytime temperatures below freezing point.

2. Between zero and 9°C the death risk seems independent of temperature in January - July, but there is evidence of a slow increase with temperature in the latter part of the year.

3. Above 9°C there is a near linear increase of risk up to a temperature of about 16°C, beyond which the risk increases rapidly, especially in the January - July period. (As in the previous analysis, the high temperatures in the latter part of the year appear to have a smaller effect than in earlier months).

4. The rapid increase above 16°C appears first in the DOA; the DIP figures show this increase at about 18°C. As not all the pigs in pens will have travelled on the day they are reported as dead, this point may demand further investigation.

5. The curves of total deaths against temperature closely fit hyperbolic equations, namely

   January - July Deaths per 1000 $= \frac{13.2}{26-T}$

   August - December Deaths per 1000 $= \frac{13.3}{27-T}$

   within the 0-25°C range.

Any comments or suggestions on this paper should be referred to the author.

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August 1973.